



RTS Test Bench 2” dia. Gold-coated Elliptical Mirror Specifications

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Application

Based on a proof-of-principle measurement, two protected gold-coated elliptical mirrors (45 deg AOI) with a hole at center are needed to measure the scatter at small angle in the TIS measurement at RTS bench in the OTF lab. One of this mirrors will be inserted into the optical path before the integrating sphere in the TIS measurement, while the specular beam will pass through the central hole, the scatter at small angle from 1 deg (defined by the aperture at the integrating sphere) to about 0.5 deg defined by the hole diameter on this mirror and its position will be reflected and focused by a lens into a photo-detector. In addition to total loss, more information about the scattering points will be obtained by the signals from the integrating sphere and the photo-detector.

General Requirements

- 1) Substrate: 2" in diameter 45 deg AOI elliptical mirror, i.e., minor axis = 50.8 +- 0.5 mm, major axis = 71.8 +- 0.5 mm. Thickness = 10 – 15 mm, tolerance +-1 mm.
- 2) Coating: protected gold with Ravg: >96% at 1064 nm and 45 deg AOI.
- 3) Circular clear aperture: >90% of diameter, i.e. > 46 mm in minor axis and > 65 mm in major axis.
- 4) Surface 1 (S1): polished with flatness $\lambda/10$ at 632.8nm and 40-20 scratch-dig over circular clear aperture, protected gold coated.
- 5) Surface 2 (S2) and barrel: fine grind.

**RTS Test Bench 2" dia. Gold-coated Elliptical Mirror Specifications****Requirements on the holes****Mirror 1**

- 1) Central hole at 45 degrees with respect to S1 (fine grind inside)
- 2) Central hole location tolerance +/- 0.5 mm of center
- 3) Central hole major axis diameter 8.5+/- 0.2 mm
- 4) Central hole minor axis diameter 6.0+/- 0.2 mm

Mirror 2

- 1) Central hole at 45 degrees with respect to S1 (fine grind inside)
- 2) Central hole location tolerance +/- 0.5 mm of center
- 3) Central hole major axis diameter 11.3+/- 0.2 mm
- 4) Central hole minor axis diameter 8.0+/- 0.2 mm